



No.SO(EP&C)6-5/2023(Misc)  
**GOVERNMENT OF THE PUNJAB**  
**HEALTH & POPULATION DEPARTMENT**  
Dated Lahore, the 25<sup>th</sup> April, 2025

To

1. **All Chief Executive Officers,**  
District Health Authorities, Punjab.
2. **All Medical Superintendents / Incharges,**  
DHQs / THQs / RHCs / BHUs in Punjab.

Subject:

**GUIDELINES REGARDING SNAKE BITE MANAGEMENT AND ADMINISTRATION**  
**OF ANTI-SNAKE VENOM (ASV) ADMINISTRATION**

Snake bites are a significant medical emergency in Pakistan, particularly in rural areas where venomous snakes are prevalent. The main venomous snakes in Pakistan include the Indian Cobra (*Naja naja*), Common Krait (*Bungarus caeruleus*), Russell's Viper (*Daboia russelii*), and Saw-Scaled Viper (*Echis carinatus*). Effective first-aid, rapid transport, and appropriate medical management are crucial in reducing morbidity and mortality.

**Identification of venomous and non-venomous snakes:**

Parameter	Venomous	Non-Venomous
Bite Marks	1-2 deep fang marks	Multiple small teeth marks (U shaped)
Local pain	Moderate to severe	Mild
Swelling	Rapid & extensive	Minimal
Bleeding	Possible (Esp with hemotoxic venom)	Absent
Systemic Effects	Present	Absent (except for anxiety related symptoms)
Paralysis	Present in neurotoxic bites (cobra, krait)	No
Coagulation Defects	Present in hemotoxic bites (viper)	No

**Dos and Don'ts of Snake-bite management:**

Dos	Don'ts
<ul style="list-style-type: none"><li>• Reassurance</li><li>• Clean wound with clean water</li><li>• Immobilize the limb, apply splint / wooden stick and wrap limb with bandage to apply pressure to occlude superficial lymphatics</li><li>• Remove tight clothing, ring, watch, bangles etc</li><li>• Patency of airways must be ensured. Remove any dentures</li><li>• Shift patient to hospital as early as possible</li></ul>	<ul style="list-style-type: none"><li>• Don't cut, suck or squeeze the wound</li><li>• Don't apply any chemical or plant leaf etc</li><li>• Don't apply tourniquet</li><li>• Don't give electric shock</li><li>• Don't apply snake stone or any traditional method as it may cause delays in treatment</li><li>• Don't use herbal remedies</li></ul>

**1. Early Hospital Management**

- **Vitals monitoring: ABCDE Protocol**

Airway, Breathing (respiratory movement), Circulation (arterial pulse), Disability of nervous system (level of consciousness).

A. **Assessment:** Assess and confirm about the snake bite. Presence of fang mark, local pain, and numbness are considered indicators for a snakebite.

B. **Bathe:** Bathe the wound with water if venom is visible.

C. **Comfort and Reassurance:** Avoid panic and assure the patient that there is no reason to be nervous or frightened. Remove constricting items such as belt, watch, ring shoes, bracelets, or tight clothes.

D. **Dressing and Immobilization:** Apply pressure bandage and immobilize the patient, which would delay venom spread. Use a pressure immobilization bandage ONLY for neurotoxic (e.g., cobra, krait). Do NOT use for viper bites, as it may worsen local tissue damage.



E. **Essential Life Support Measures:** Pain Management with paracetamol (avoid NSAIDs due to bleeding risk), Tetanus Prophylaxis if vaccination is not up to date. If the patient is in shock and requires cardiopulmonary resuscitation, treat accordingly.

## 2. Detailed Clinical Assessment.

- Evaluation of Fang mark: Generally, the presence of two puncture wounds indicates a bite by a venomous snake.
- In the case of a small, non-venomous snake bite, multiple punctured wounds are seen arranged in an arc.
- **Laboratory Test:** 20-minute whole-blood-clotting test (20WBCT).  
Take 2 ml of fresh venous blood from the patient in a new, clean, dry glass test tube and leave it undisturbed for 20 minutes. After 20 minutes, gently tilt the test tube to a 45-degree angle and examine. If it remains liquid, this is evidence of coagulopathy and the victim requires ASV. If the blood is clotted, then no ASV is necessary at this stage.
- **Other Lab investigations:** Coagulation profile (PT, INR, aPTT, fibrinogen, platelets), Kidney function tests, Urine examination for hematuria or myoglobinuria, Complete blood count (CBC).

## 3. Anti-venom Administration.

Antivenom is the only effective antidote for snake venom. It is an essential element of treatment of systemic envenoming but may be insufficient on its own to save the patient's life. Antivenom may be expensive and in short supply.

**Indications:** It is recommended that antivenom should be used only in patients in whom the benefits of treatment are considered to exceed the risks of antivenom reactions. Since antivenom is relatively costly and often in limited supply, it should not be used indiscriminately. These practices should be strongly discouraged as they expose patients, who may not need treatment, to the risks of antivenom reactions. They also waste valuable and scarce stocks of antivenom. Examine the patient and establish the time of bite. Patients bitten 18 hours ago and still asymptomatic may be non-venomous. ASV is indicated in all patients having systemic and/or severe local envenoming, including:

### Systemic envenoming

- Haemostatic abnormalities: Spontaneous systemic bleeding (**clinical**), coagulopathy (20WBCT or other laboratory tests such as prothrombin time) or thrombocytopenia ( $<100 \times 10^9/\text{litre}$  or  $100,000/\text{cu mm}$ ) (**laboratory**).
- Neurotoxic signs: ptosis, external ophthalmoplegia, paralysis etc (**clinical**).
- Cardiovascular abnormalities: hypotension, shock, cardiac arrhythmia (**clinical**), abnormal ECG.
- Acute kidney injury (renal failure): oliguria/anuria (**clinical**), rising blood creatinine/ urea (**laboratory**).
- (Haemoglobin-/myoglobin-uria): dark brown urine (**clinical**), urine dipsticks, other evidence of intravascular haemolysis or generalised rhabdomyolysis (muscle aches and pains, hyperkalaemia) (**clinical, laboratory**).
- Supporting laboratory evidence of systemic envenoming (see above).

### Local envenoming

- Local swelling involving more than half of the bitten limb (in the absence of a tourniquet) within 48 hours of the bite. Swelling after bites on the digits (toes and especially fingers).
- Rapid extension of swelling (for example, beyond the wrist or ankle within a few hours of bite on the hands or feet).
- Development of an enlarged tender lymph node draining the bitten limb

### Initial Dose:

- Snakes inject the same dose of venom into children and adults. Children must therefore be given the same dose of anti-venom as adults.
- It is recommended to administer an initial dose of 5–10 vials of polyvalent anti-snake venom serum injection.
- Constant monitoring of vital signs at half-hourly intervals during the initial one-hour period is recommended.
- Requirement of further dosing is based on the extent of reversal of coagulopathy confirmed after six hours of antiserum administration by WBCT in a hemotoxic bite case or if symptoms persist,



worsen, or respiratory failure develops in a neurotoxic bite case after one hour of antiserum administration.

- If the blood is still coagulable or no signs of reversal of paralysis are seen, a further dose of 5 to 10 vials of antiserum should be administered by slow IV infusion.

**Dilution and Administration:** Each lyophilized ASV vial is usually reconstituted with 10 mL of sterile water for injection. Both reconstituted and liquid ASV vial must be diluted in 0.9% normal saline before administration. Anti-venoms are large molecules when administered intramuscularly (IM) Their absorption is low and painful, therefore it **should not be administered through the IM route** and should be administered as intravenous (IV) infusion over 30-60 minutes or in severe cases ASV can be given undiluted as a slow IV push over a time period of 10 to 15 minutes (not more than 2 ml/minute). The total reconstituted ASV dose of both reconstituted and liquid ASV is diluted in approximately 5-10 ml of isotonic fluid per kg body weight (i.e. 250-500 ml of isotonic saline or 5% dextrose in the case of an adult patient) and is infused at a constant rate over a period of about one hour.

#### **If Adverse Reaction occurs:**

- Antivenom administration must be temporarily suspended.
- Because severe, life-threatening anaphylaxis can evolve so rapidly, epinephrine (adrenaline) should be given at the very first sign of a reaction, even when only a few spots of urticaria have appeared or at the start of itching, tachycardia or restlessness.
- Epinephrine (adrenaline) (0.1% solution, 1 in 1,000, 1 mg/ml) is the effective treatment for early anaphylactic and pyrogenic antivenom reactions. Epinephrine (adrenaline) is given intramuscularly (into upper lateral thigh) in an initial dose of 0.5 mg for adults and 0.01 mg/kg body weight for children.
- Check pulse, it should raise and symptoms should begin to improve in 12 to 15 minutes. If symptoms are not improving give second dose of adrenaline, the second dose will cure virtually all the patient and ASV can be resumed.
- The dose can be repeated every 5-10 minutes if the patient's condition is deteriorating.
- Give intravenous anti-histamine such as chlorphenamine maleate (adults 10 mg, children 0.2 mg/kg) over a few minutes followed by intravenous hydrocortisone (adults 100 mg, children 2 mg/kg body weight).
- Since no prophylactic drug regimen has proved effective in reducing the incidence or severity of early antivenom reactions, these drugs should not be used except in high-risk patients.
- All patients should be watched carefully for two hours after the completion of antivenom administration and should be treated with epinephrine/adrenaline at the first sign of a reaction.

#### **Reporting of Adverse Reactions:**

Each reaction shall be reported to Directorate of Drugs Control Punjab by the Pharmacovigilance Officer i.e., Pharmacist / Nurse / Physician via MSS portal, Yellow-form or hotline 1033 for further necessary action as needed.

**Note:** Skin and conjunctival "hypersensitivity" tests will reveal IgE mediated Type I hypersensitivity to horse or sheep proteins. However, since the majority of early (anaphylactic) or late (serum sickness type) antivenom reactions result from direct complement activation rather than from IgE mediated hypersensitivity, these tests are not predictive. Since they may delay treatment and can in themselves be sensitizing, these tests should not be used.

#### **Repeat the dose of ASV:**

##### **In viperine bite:**

- 6 hours after completion of 1st dose repeat the coagulation profile and 20 WBCT. If incoagulable repeat the dose. Repeat test after 6 hours elapse of the 2<sup>nd</sup> dose. (Viperine bites should be managed on 06 hours cycle).
- In patients who continue to bleed briskly, the dose of antivenom should be repeated within 1-2 hours.

##### **In neurotoxic bite:**

- Once the initial dose is given the patient is reviewed after one hour.
- Worsening of neurological symptoms, repeat the dose (2<sup>nd</sup> dose) give over one hour.



- If symptoms have not worsened review after two hours.
- If symptoms do not improve after two hours a second dose is given.
- Once the patient has received the 2nd dose – ASV should be stopped. The patient will now either recover or require the mechanical ventilation. No role of very large dose of ASV in neurotoxic bite. Patient should be referred to the facility with ventilator.
- A clear airway must be maintained. Once there is loss of gag reflex and pooling of secretions in the pharynx, failure of the cough reflex or respiratory distress, a cuffed endotracheal, laryngeal mask airway or i-gel supraglottic airway should be inserted.

**4. Storage:** Room temperature deteriorates the protein contents of anti-snake venom, so it must be stored 2-8°C (cold chain must be maintained).

#### 5. Disposal

Left-over anti-snake venom and used empty vials should be disposed of as biomedical waste.

#### 6. Bare Minimum Stock Level in Primary and Secondary Healthcare Facilities

Sr.No	Health Facility	ASV Stock threshold
1.	DHQ	50
2.	THQ	30
3.	RHC	10

#### Note:

- All the dispensation of ASV must be maintained/updated on the MIMS portal.
- Availability of ASV in the above-mentioned health facilities or any other facility within the district is the responsibility of the concerned CEO.
- If any health facility has excess stock or inadequate ASV stock, the CEO of the District can reallocate the vaccine stock within the district or outside (under intimation to Directorate General Health Services) the district(s) for rational utilization of vaccine stocks.
- In case of insufficiency of vaccine in the district, the concerned CEO can contact the Directorate General Health Services Office for top-up only.

These guidelines shall supersede all previous notifications concerning anti-Snake venom administration guidelines and must be circulated among all relevant health facilities by the concerned CEO (DHA) offices.

  
SECTION OFFICER (EP&C)

#### No. & Date Even:

A copy is forwarded for information and necessary action to:

1. Director General Health Services, Punjab.
2. The Senior Data Processor, (HISDU) with a request to circulate through e-mail to all concerned.
3. PSO to Secretary, Health & Population Department, Punjab.
4. PS to Special Secretary (Operations), Health & Population Department, Punjab.
5. PA to Additional Secretary (Technical), H&P Department.
6. PA to Deputy Secretary (Technical I&II), H&P Department.
7. Master File.

  
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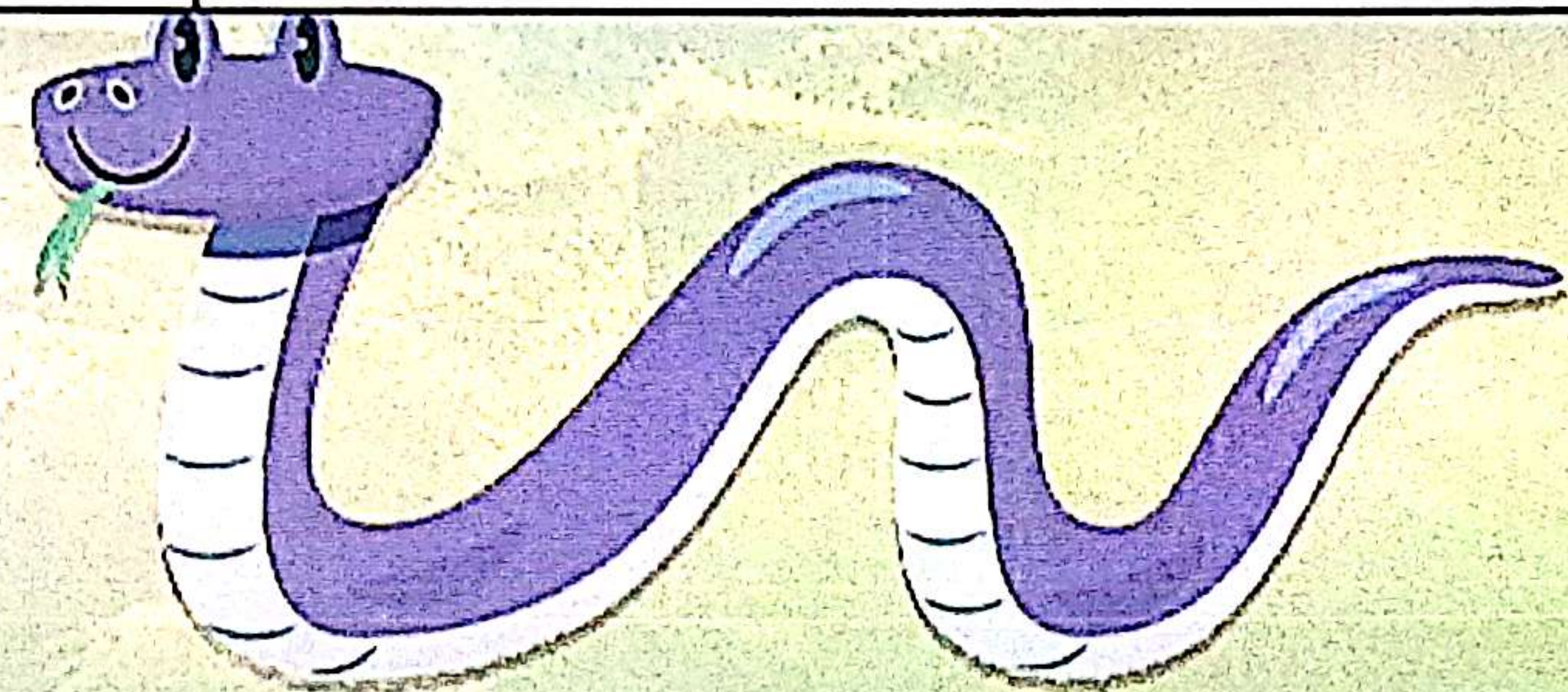




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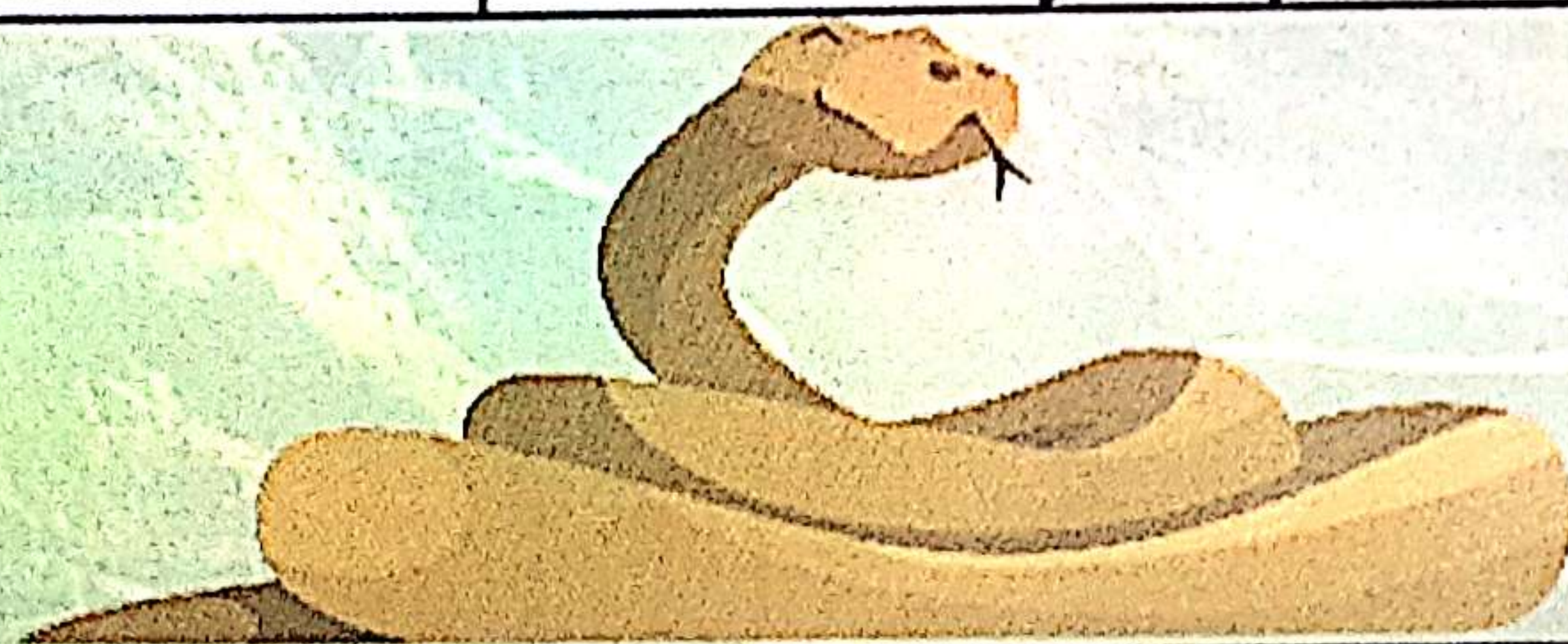




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## Dos and Don'ts of Snake-bite management:

Dos	Don'ts
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# SNAKE BITE CARE INDICATORS

## 1 FIRST AID

- » Clean bite site
- » Place cloth pad over bite site and apply a tight bandage to produce moderate pressure
- » Keep bitten limb still with a splint
- » Keep patient still, carry them to care if possible
- » If the snake has been killed, bring it with the patient

## 2 20 MINUTE WHOLE BLOOD CLOTTING TEST

- » Collect about 3 ml venous blood and place in a clean dry glass bottle (or test tube) that has been washed only with water (not detergent/soap)
- » Allow to stand undis-turbed for 20 mins, then check for presence of a blood clot (absent clot = +ve) by gently tipping/inverting container

## 3 SIGNS OF NEUROTOXICITY

- » Double vision (Drooping eyelids)
- » Bilateral ptosis (eyes don't fully open)
- » Partial or complete ophthal-moplegia
- » Other cranial nerve weakness (Flaccid Paralysis)
- » Hypotonia/General muscle weakness
- » Respiratory weakness/distress

## 4 SIGNS OF HAEMOTOXICITY

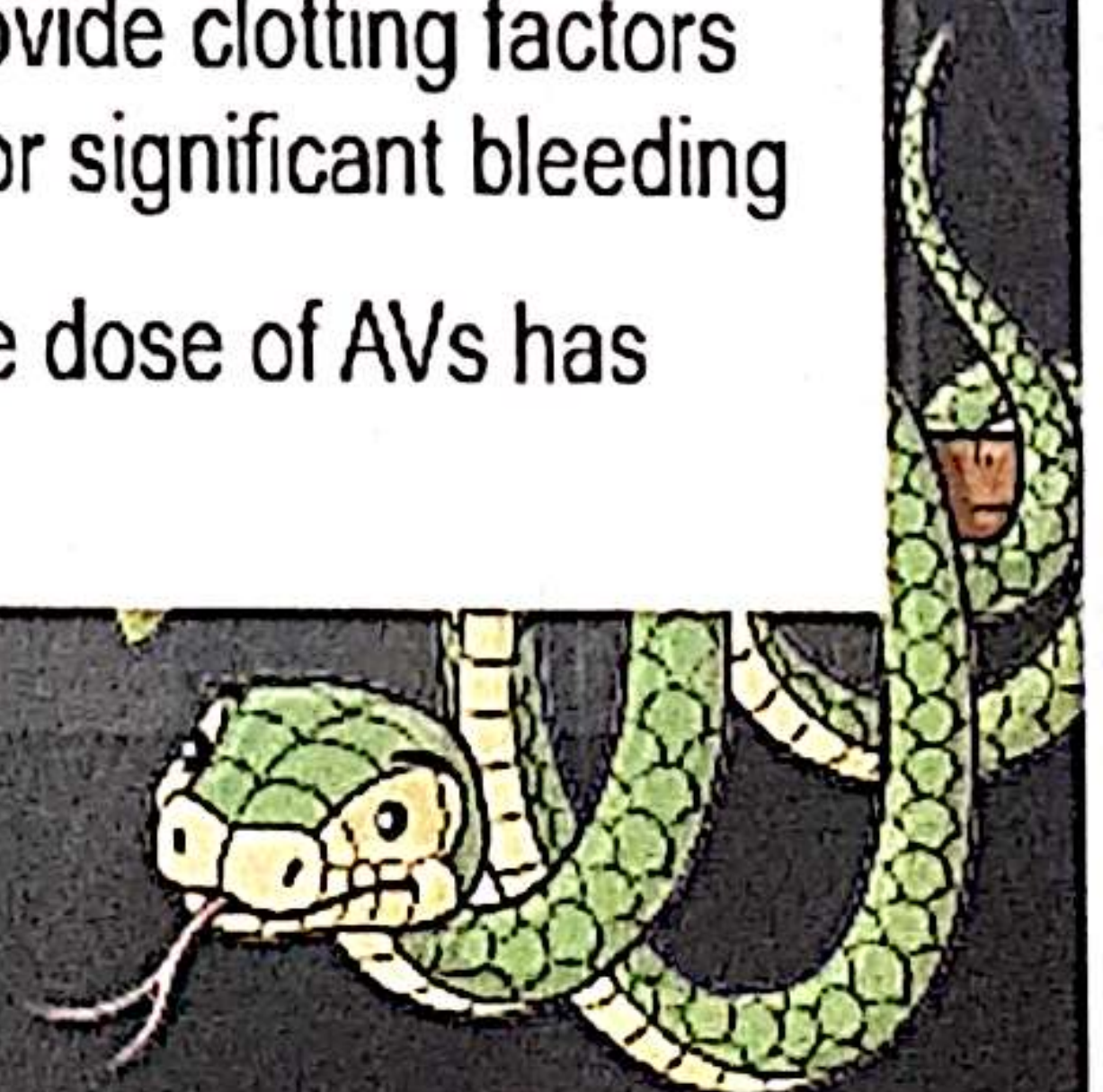
- » Bleeding from Gums, Nose, Wounds
- » Spontaneous bruising
- » No Blood Clotting after 20 min White Blood Clotting Test

## 5 INDICATIONS FOR ANTIVENOM

- » Rapid extension of local swelling
- » Tender lymphadenopathy (when associated with other indications)
- » Developing paralysis (bilateral ptosis, slurred speech, difficulty in opening mouth, protruding tongue, increased salivation & drooling, generalised weakness)
- » Respiratory distress (paralysis), and Non-clotting of blood (WBC Test)
- » Spontaneous systemic bleeding-developing shock
- » Oliguria/anuria or heavy proteinuria (3+)

## 6 EMERGENCY CARE

- » Check airway, breathing, circulation (BP, MR, RB, SPO2)
- » Protect airway & ventilate if required
- » Volume resuscitate + consider inotropes if in shock
- » Control haemorrhage + provide clotting factors (FFP/cryoprecipitate etc) for significant bleeding
- » After ensuring an adequate dose of AVs has been given







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# Snakebite Envenoming

## Systemic envenoming

- Haemostatic abnormalities: Spontaneous systemic bleeding (clinical), coagulopathy (20WBCT or other laboratory tests such as prothrombin time) or thrombocytopenia (laboratory).
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- Cardiovascular abnormalities: hypotension, shock, cardiac arrhythmia (clinical), abnormal ECG.
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## Local envenoming

- Local swelling involving more than half of the bitten limb (in the absence of a tourniquet) within 48 hours of the bite.
- Swelling after bites on the digits (toes and especially fingers).
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- Development of an enlarged tender lymph node draining the bitten limb







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## Dilution and Administration

The total reconstituted ASV dose of both reconstituted and liquid ASV is diluted in approximately 5-10 ml of isotonic fluid per kg body weight i.e. 250-500 ml of isotonic saline and is infused at a constant rate over a period of about one hour.

### Initial Dose

- Snakes inject the same dose of venom into children and adults. Children must therefore be given the same dose of anti-venom as adults.
- Dilution of ASV in 0.9% Normal Saline.
- Check Vitals half hourly during the initial one-hour period.
- Check for reverse of coagulopathy by 20 minutes WBCT if symptoms persist, worsen, or respiratory failure develops in a neurotoxic bite case after one hour of antiserum administration.
- If the blood is still coagulable or no signs of reversal of paralysis are seen, a further dose of 5 to 10 vials of antiserum should be administered by slow IV infusion.

